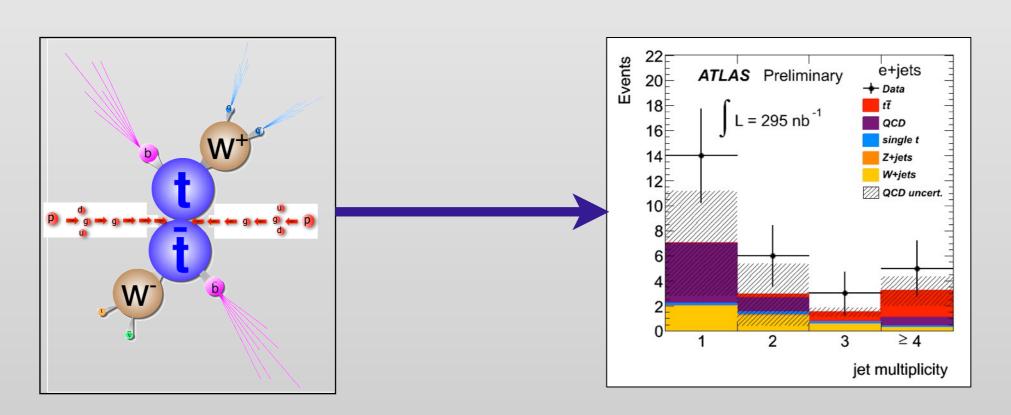




New Monte Carlo Event Generator Review

J.-F. Arguin (LBNL) November 19-20, 2010





Motivation



- Monte Carlo Event Generator: programs that randomly generate events (observables) at the theoretical-level, i.e. before detector simulation
 - -Examples: PYTHIA, HERWIG, ALPGEN, MC@NLO, MCFM, etc
- Used ubiquitously in particle physics
 - Detector design, detector commissioning, background estimation, signal modeling, etc, etc
- Large field of research
- If RPP aims to provide a wide coverage of HEP, this review is an obvious addition



The Team



Authors:

- -Paolo Nason (INFN):
 - One of the main POWHEG authors
- -Peter Skands (CERN):
 - One of the main PYTHIA authors

Overseer:

- -Christian Bauer (LBNL)
 - Leading author of GENEVA (future NLO event generator for the Large Hadron Collider)



General Outline



I. Introduction

Plan to build upon the existing QCD review

2. Perturbative aspects of event generation

- Parton shower
- Fixed-order monte carlo (leading and next-to-leading order)
- Note: emphasize that both are correct extension of QCD

3. Phenomenological models

Hadronization, underlying event, decays, etc

4. Tools

Link existing programs with previously introduced concepts